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August 14, 1995

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Federal Communications Commission
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RECEIVED

AUG 14 1995

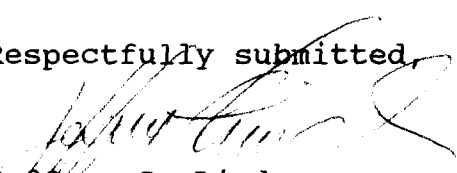
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

Re: Ex Parte Contact in Docket No. 94-102

Dear Mr. Caton:

This is to advise you that a presentation about wireless/E911 issues was made today to John Cimko, Nancy Booker, Dan Grosh, Marty Liebman and Karen Rackley of the Wireless Bureau Policy Division. The presenters were Mary Madigan (of the Personal Communications Industry Association), Mary Boyd (of Texas Advisory Commission on State Emergency Communications), Bob Hight (of Nortel), John Melcher (of Greater Harris County 9-1-1 Emergency Network), and Gary Jones (of Omnipoint Corporation). Attached are two copies of the materials that were handed out and used as the basis for the presentation.

Respectfully submitted,


Jeffrey S. Linder
Counsel for Personal
Communications Industry
Association

JSL:rw

cc: (w/o)
John Cimko
Nancy Booker
Dan Grosh
Marty Liebman
Karen Rackley

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041

E911 Technical Briefing for FCC Staff

August 14, 1995

9:00 a.m.	Welcome and Introductions	Mary Madigan
9:10 a.m.	911 Overview	Mary Boyd
9:45 a.m.	Today's E911 Network	Bob Hight
10:20 a.m.	Break	
10:30 a.m.	Wireless & E911 PSAP of the Future	John Melcher
11:10 a.m.	Standards and Wireless of the Future	Gary Jones
11:45 a.m.	Open Discussion	

FCC Technical Briefing

Gary K. Jones

Director of Standards Policy

Omnipoint Corporation

Co-Chair - PCIA Technical and Engineering
Committee

Co-Chair - JTC on Wireless Access

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Gary Jones - Omnipoint

Past History

- Joint Position Paper with APCO and NASNA
- Co-sponsored the Wireless E911 "JEM"
- Commented on the FCC's E911 Proceeding

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What is New

- In Its Comments, PCIA Proposed for E911

- An Evolutionary Path to Wireless E911 Compatibility
- A Four Step Approach to Expedite that Compatibility
- A Joint Coordinating Function

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The Four Step Process

- Effected interests develop a Standards Requirements Document (SRD)
- Industry translates these requirements into hardware design and data transfer standards
- Manufacturers build and field test prototype equipment
- Tested and proven equipment commercially deployed

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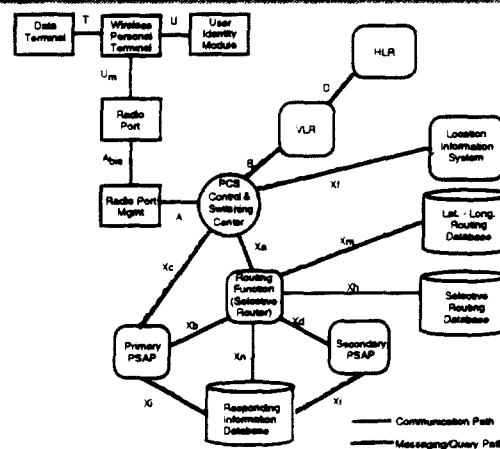
Standards Requirements Document

- Consider the Entire Network
- Make Applicable to New as well as Existing Networks
- Rethink the Functional Elements
- Consider the Impact on All Interfaces

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Functional Network Architecture



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Standards Requirements Document

- Generated by PCIA E911 Task Group
- Shared with Public Safety and CTIA for Comment
- Next Meeting - August 15 at APCO Convention in Detroit
- Goal of Aug. - Sept. Completion

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Wireless Industry Challenges

- User Location
- Priority Access
- Call Queuing
- Roamer Call Back

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User Location

- Multiple Methodologies
 - Triangulation
 - Time Differential of Arrival
 - Dionne Warwick's Psychic Friends
- Different for each air interface
- Must be tested in a "wireless" environment
- How is it paid for?

Priority Access

- Is Priority Access and Channel Assignment (PACA) a requirement for "Public" systems?
- How many levels of priority will there be?
- Who gets what level of priority?
- What level of priority does a 9-1-1 call get?
- How is it paid for?

Call Queuing

- Unclear how radio systems can queue calls
- Unclear impact on radio resources
- Unclear how network capacity impacts radio system queuing requirements

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Roamer Call Back

- Dialable number is a personal number
 - Associated with the subscriber, not the device
 - Number may be non-geographic
 - A roamer's HLR will be located outside the PSAP serving area
- Call back needs to be local
- Call back needs to be quick

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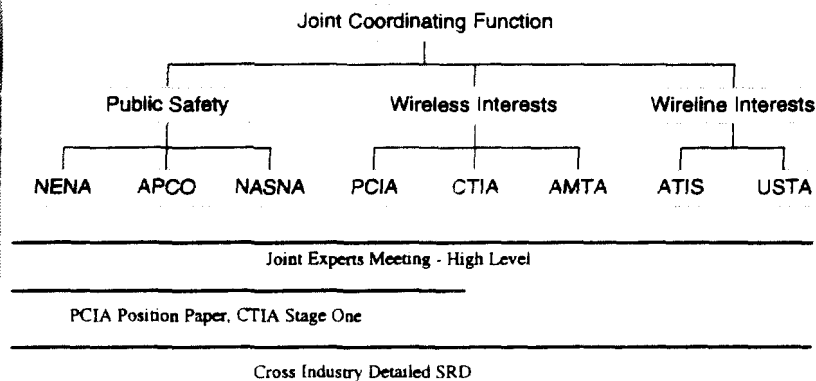
Standards Development Efforts

- T1P1, TR46 and JTC for Air Interface issues
- T1P1, TR45 and TR46 for some Network issues
- T1S1 for SS7 Signaling issues
- T1M1 for O,A,M and P issues

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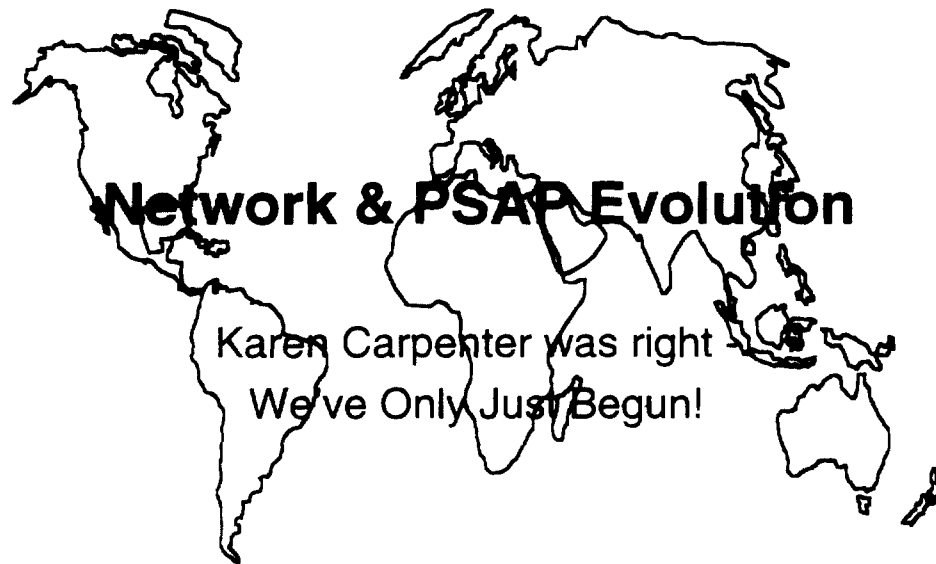
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Joint Coordinating Function



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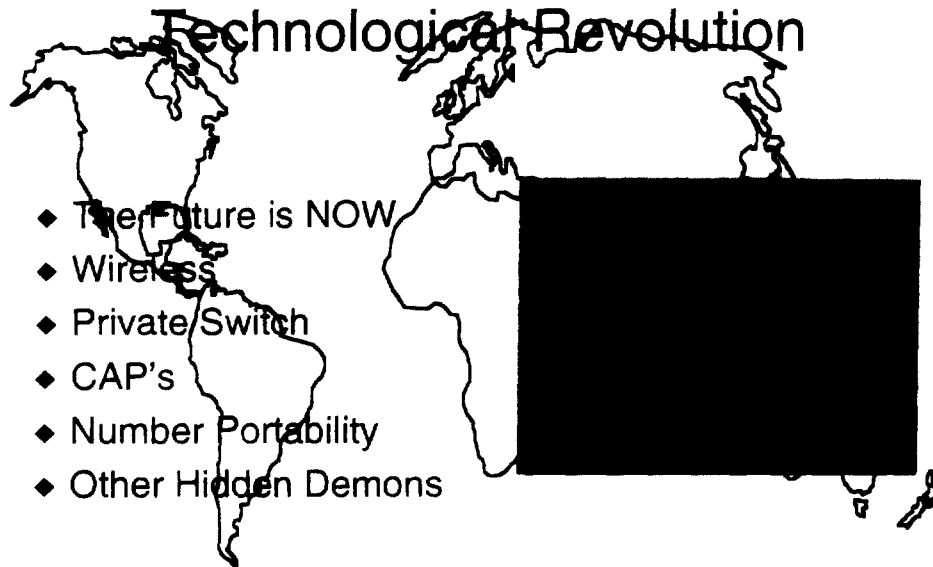


PSAP of the Future



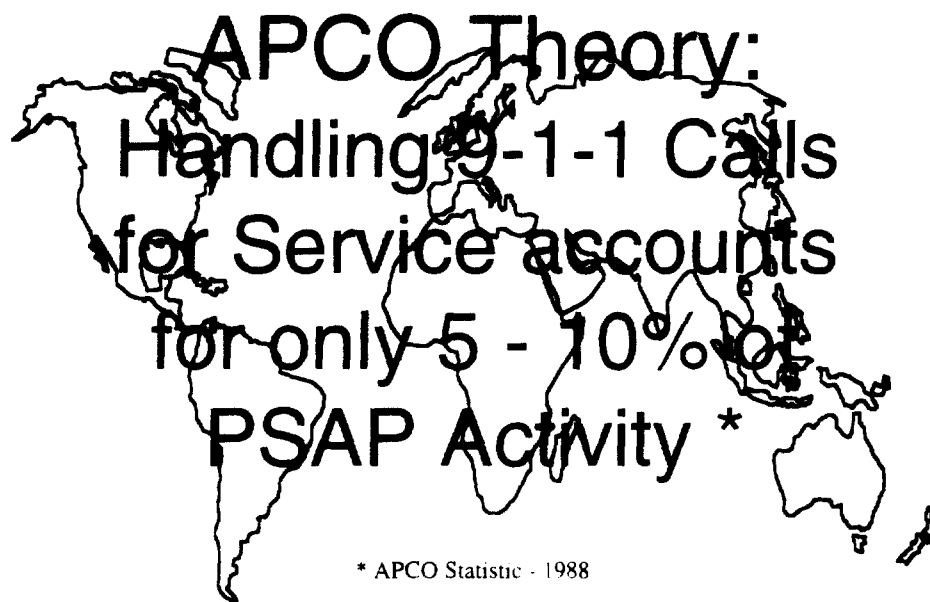
PSAP of the Future

Technological Revolution



- ◆ The Future is NOW
- ◆ Wireless
- ◆ Private Switch
- ◆ CAP's
- ◆ Number Portability
- ◆ Other Hidden Demons

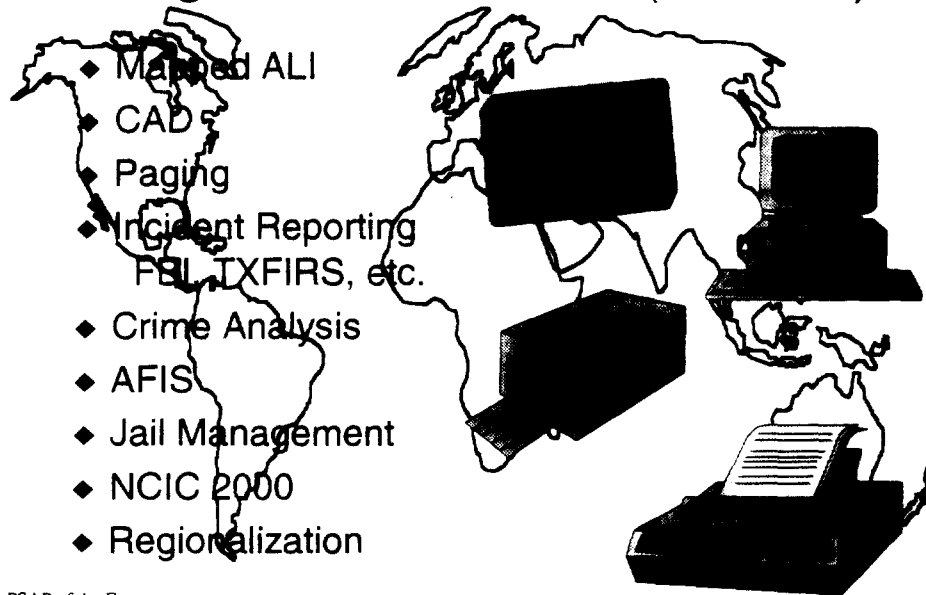
PSAP of the Future



* APCO Statistic - 1988

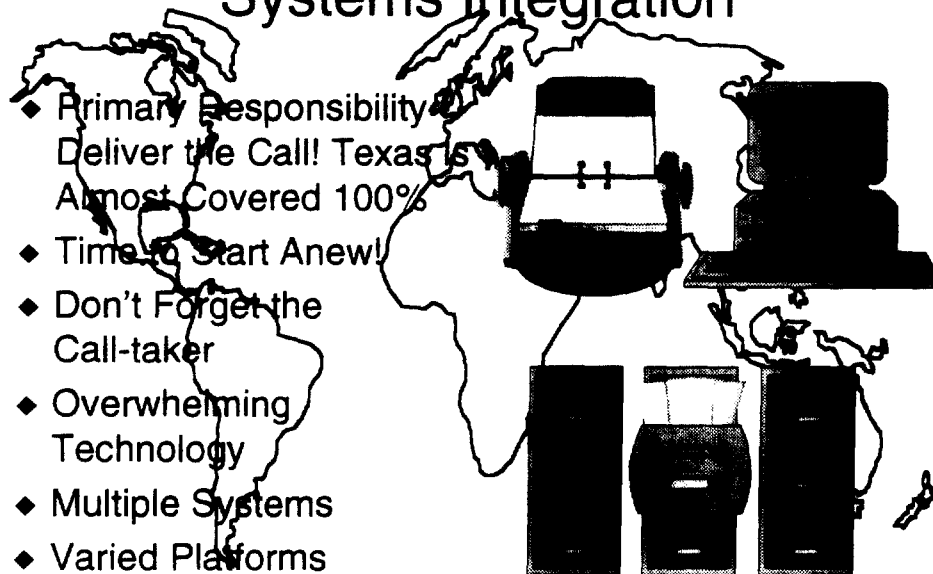
PSAP of the Future

Forget the Demons - (for now)



PSAP of the Future

Systems Integration

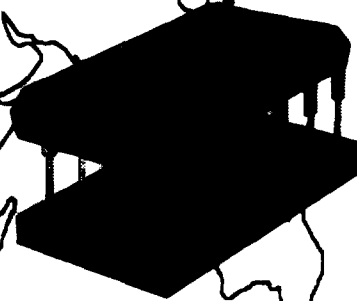


PSAP of the Future

PSAP Intelligence - Key to Success

- ◆ Integration via desktop intelligence
- ◆ Exploit the Intelligent Network - G.T.
- ◆ Call Control with voice and data
- ◆ Geospatial Data (Maps) X,Y,Z
- ◆ Single or Networked PSAP Operations
- ◆ Cost Efficiency - Off the shelf

PSAP of the Future



Demon Repellant!

- ◆ Mainstream the Network
- ◆ Mainstream the CPE
- ◆ Mainstream the Engineering
- ◆ Seamless Architecture
- ◆ Mainstream Makes Money - We Don't Mind!

PSAP of the Future



**“Press Hard, you’re making
eight copies!”**



- ◆ NOT overnight
- ◆ Embedded Base - Substantial Investment
- ◆ 9-1-1 could be a better business case - that's O.K.

PSAP of the Future

Ain't Gonna Be Easy!



- ◆ Political Challenges
- ◆ Embedded Base (6 days)
- ◆ Cost Sharing
- ◆ Ownership Issues
- ◆ Value Added Systems - Maintaining Basic System Integrity
- ◆ Can't Wait - Stay Ahead of the Technology Curve

PSAP of the Future

Today's E911 Network: An Overview

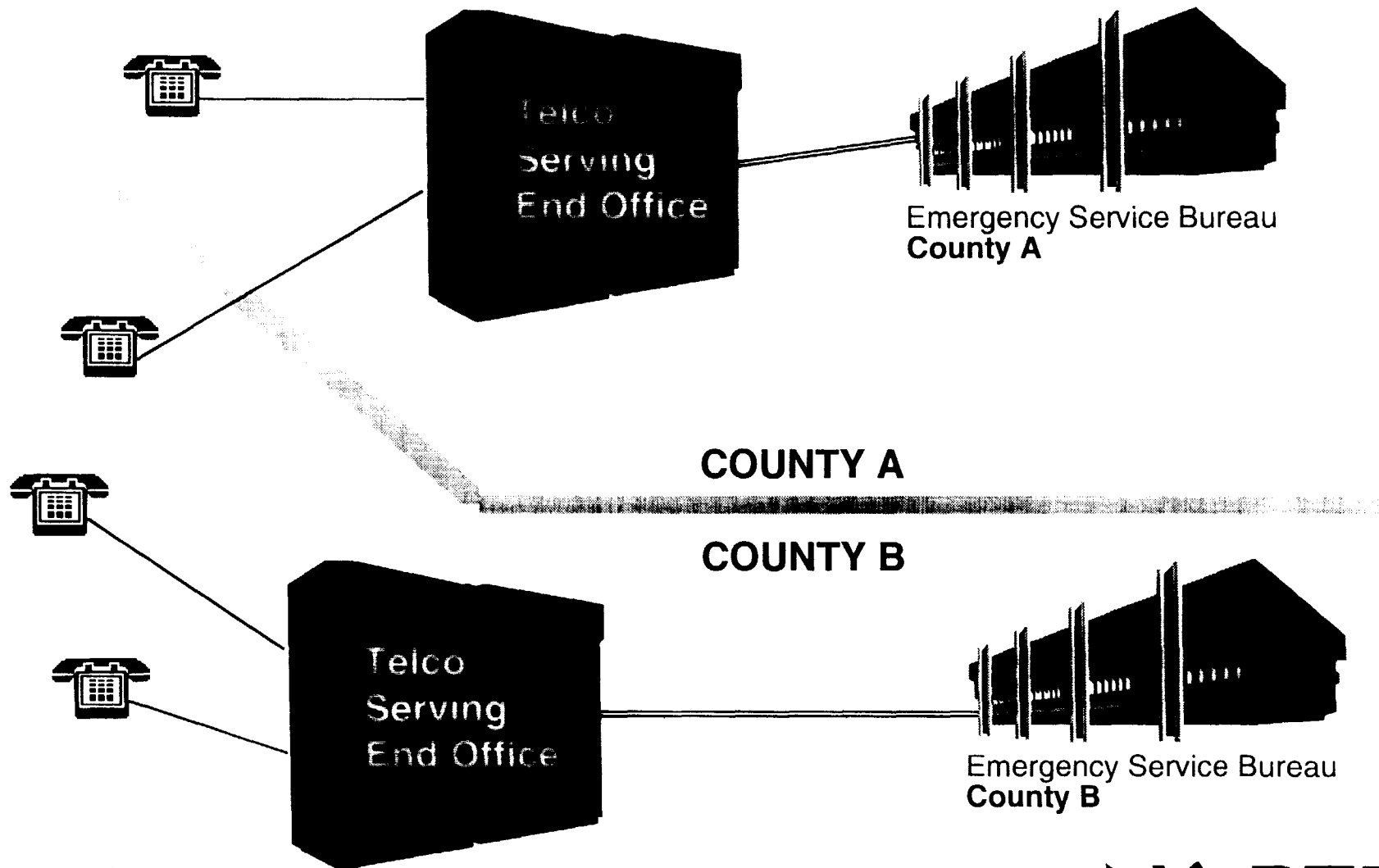
Presented by:

Bob Hight
E911 Product Manager
NORTEL North America
Research Triangle Park, NC

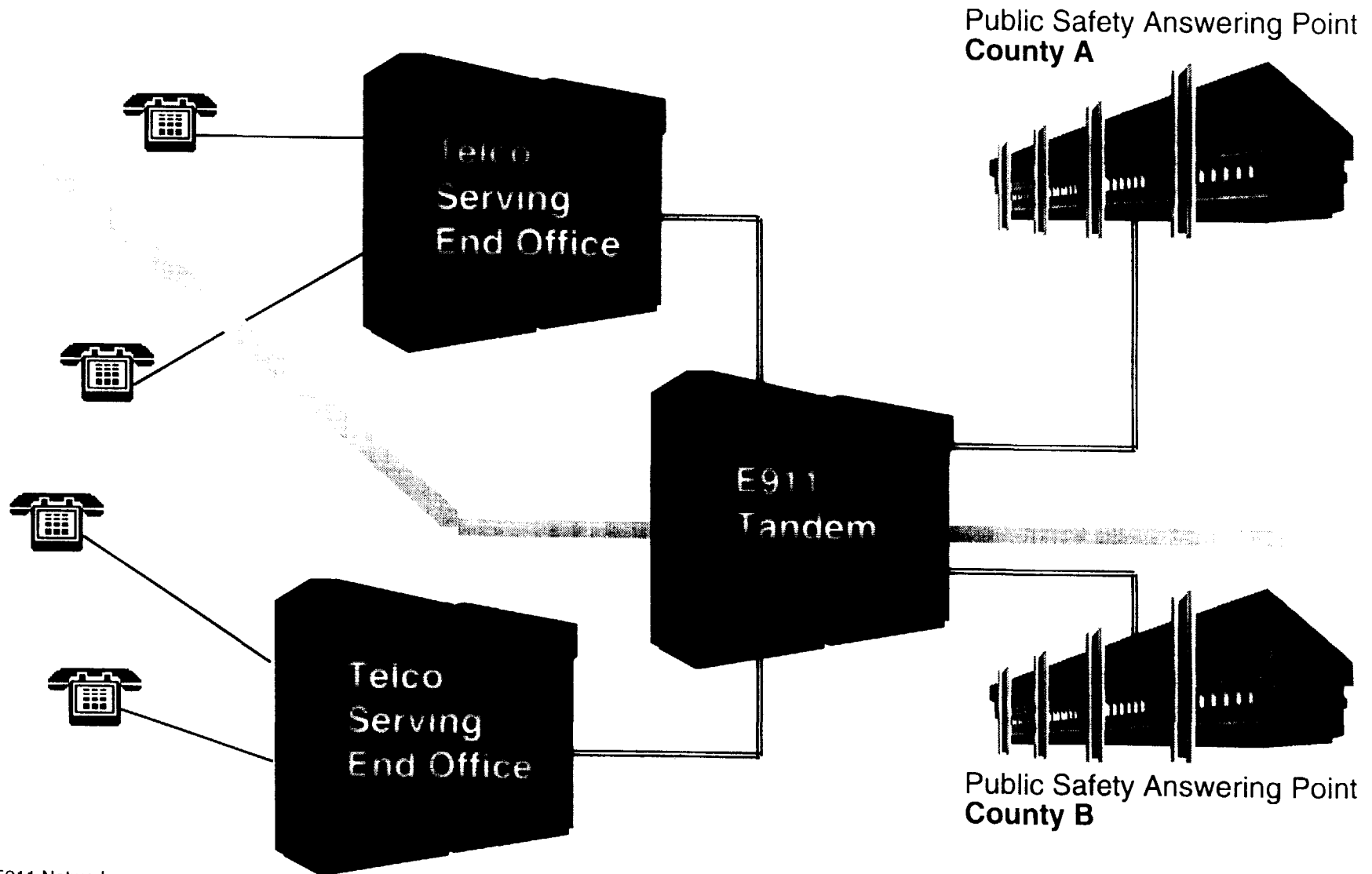
Today's E911 Network is....

- Dedicated, overlay network
 - Provides increased assurance of call delivery
 - But is inflexible and expensive to maintain
- Ad Hoc Interface Specifications
 - Bellcore TR-TSY-000350 is 7 years old and based on 20+ year old technology
 - NENA Specifications address parts, but not whole
- Diverging Evolution Strategies
 - Public Switched Network
 - Customer Premise Equipment (PSAPs)
 - Automatic Location Information (ALI) Databases
- Primary Assumption
 - THE PHONE NUMBER DELIVERED TO THE PSAP REPRESENTS WHO THE CALLER IS AND WHERE THEY ARE CALLING FROM. ANI IS THE KEY
 - Not so anymore!

Basic 911 Call Routing



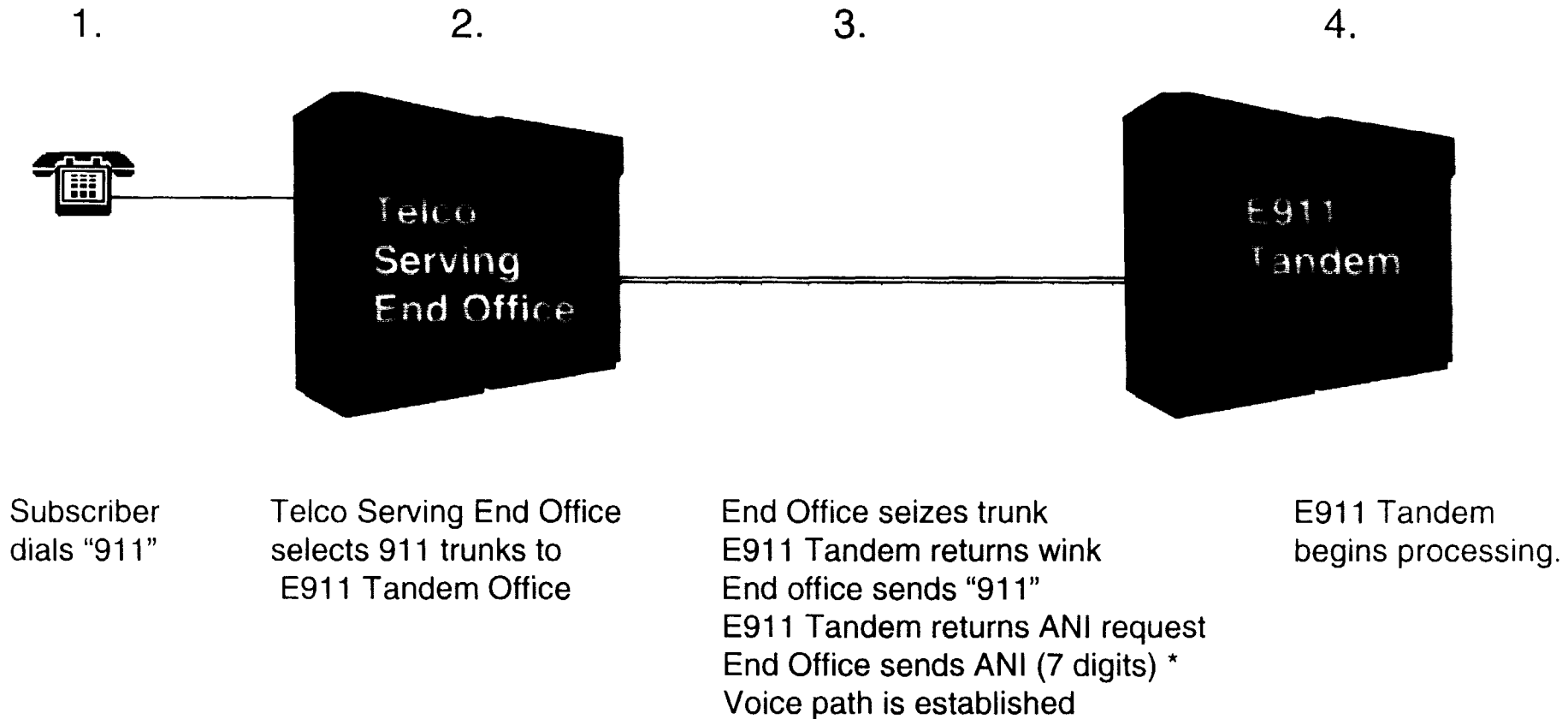
Enhanced 911 Call Routing



Today's E911 Network
August 14, 1995

ANI IS THE KEY

End Office to E911 Tandem Set Up

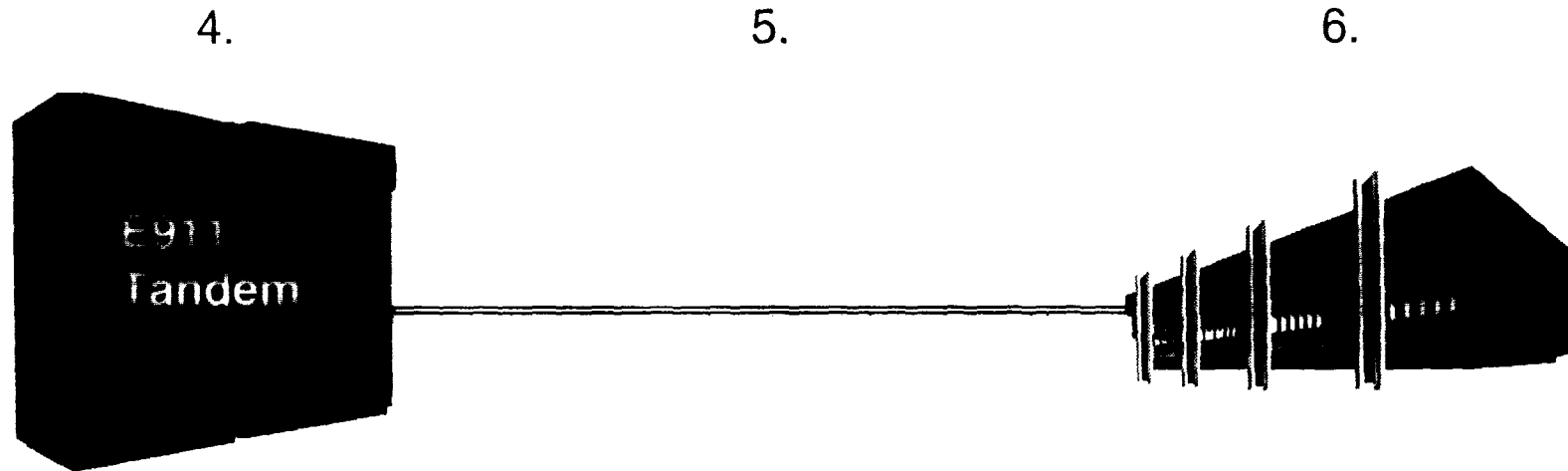


ANI = telephone number

* Bellcore Standard ANI format:
KP + I + 7D ANI + ST

ANI IS THE KEY

E911 Tandem to PSAP Set Up



E911 Tandem accepts call
Determines NPA (7D ANI => 10D ANI)
Consults Selective Routing Database
- matches ANI to correct PSAP
- determines alternate PSAPs
Selects PSAP trunk

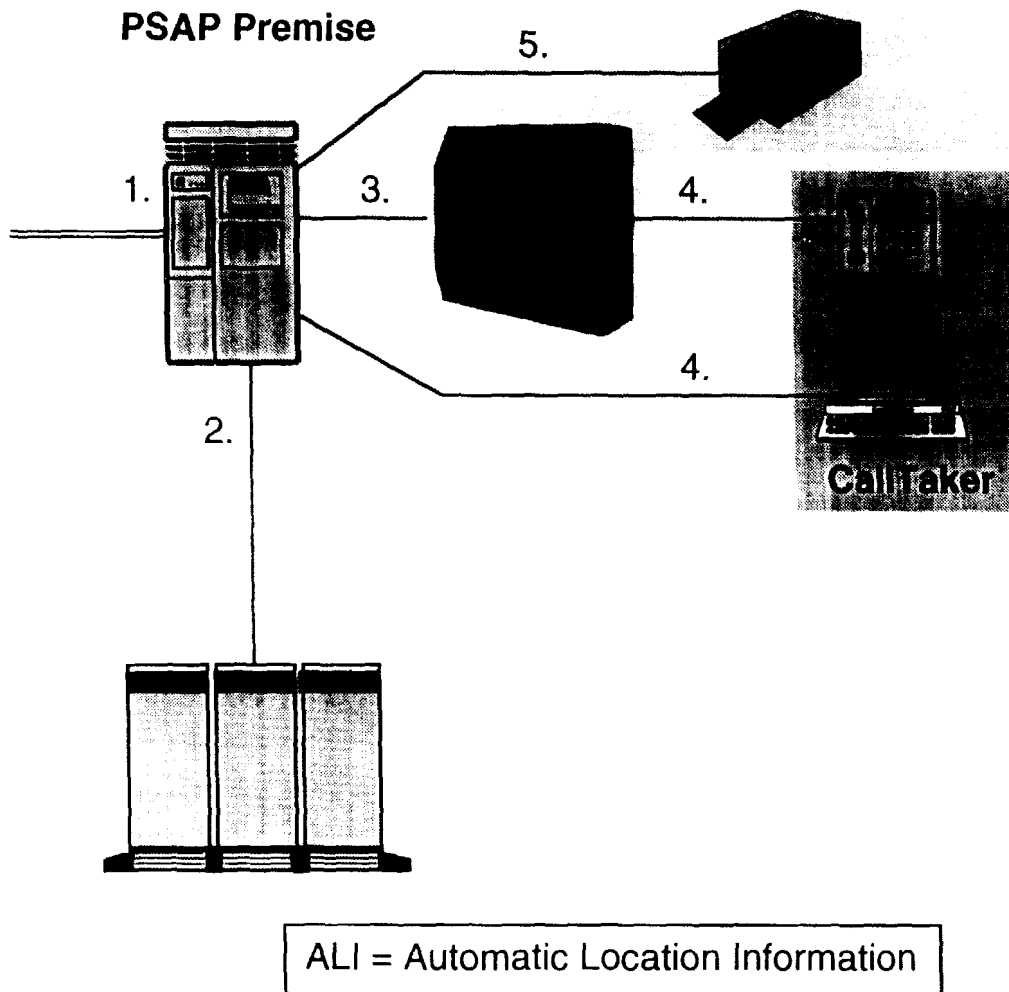
E911 Tandem seizes PSAP trunk
PSAP returns wink (ANI req)
E911 Tandem sends ANI *
PSAP returns answer supervision
Voice path is established

PSAP begins processing.

Bellcore TR-TSY-000350 format
KP + NPD + 7D ANI + ST

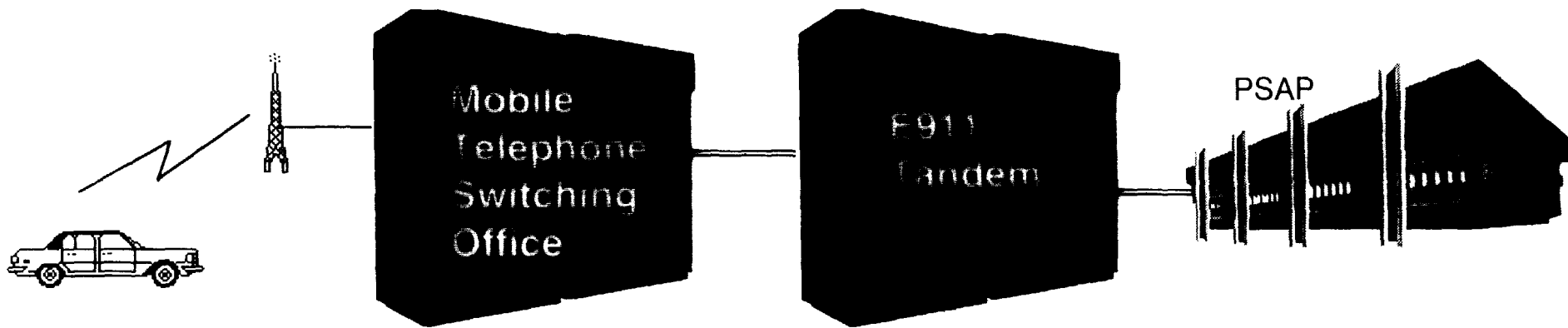
NPA = 3 digit area code
NPD = 1 digit NPA encoding

PSAP Call Processing



1. Call arrives at ANI/ALI Controller on PSAP premise.
2. ANI/ALI Controller decodes ANI and sends query to ALI database. ALI Database returns address and other pertinent information to ANI/ALI Controller.
3. ANI/ALI Controller sends voice call to PBX. PBX selects next available CallTaker and informs ANI/ALI Controller of selection.
4. PBX sends voice and ANI to CallTaker's voice terminal. ANI/ALI Controller sends ALI data to CallTaker's data terminal.
5. Call detail is recorded (voice, call progress time stamps, etc.)

Today's Wireless E911 Set Up



Mobile subscriber
dials "911"

MTSO collects MIN and
forwards MIN as ANI

E911 Tandem routes all
wireless/cellular 911 calls
to PSAP designated to
handle wireless calls.
Forwards MIN as ANI

PSAP queries ALI DB
using MIN. If caller is
local, ALI available. If
caller is roamer, no ALI
available. Location is
not determinable.

MIN = Mobile Identification Number

Mobile subscriber
dials "911"

MTSO determines tower
facing and translates to a
"pseudo-ANI" that represents
tower facing. Pseudo-ANI is
forwarded to E911 Tandem.

E911 Tandem routes call
based on pseudo-ANI to
PSAP closest to tower
facing.

PSAP queries ALI DB
using pseudo-ANI. ALI
DB returns location of
tower facing. Caller
name not determinable.

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